25X1A

Project #1009

[redacted] DB

22 June 1964

[redacted] EDLB

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Ultra-Violet Densitometry

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Under a contract with [redacted] a viewer is being developed which uses ultra-violet radiation for projecting a transparency on a screen. The screen fluoresence is in proportion to the transparency's transmission distribution, and affords a high-intensity, high resolution viewer which can be of significant improvement over current screening materials.

It is known that photographic materials absorb and/or pass unattenuated certain portions of the spectrum. Because of this, it is important to know the relationship between densities read with visible light and those determined with ultra-violet. We should know of any insensitive regions, as well as those areas of optimum sensitivity. We further should know the ultra-violet gamma in terms of the visible gamma, if they are indeed related, because it could affect our processing.

The development branch has not made a formal request that we investigate this problem, perhaps because it is considered too early for such considerations. However, since the problem has a long range interest, it will be carried out unrequested, with the results forwarded to the monitor of the project, for his information and transmission to the contractor.

The Problem:

All positive-type materials used at NPIC for viewing should be analyzed for behavior under ultra-violet. Using the Perkin-Elmer Spectrophotometer, the absorption spectrum of typical materials should be investigated, over the region of the spectrum which can be expected to appertain. In all probability, the contractor will use the UV radiation from a mercury arc, but we should be prepared for nearly all portions of the spectrum.

These measurements should be carried out with density samples the calibration of which should be established for the visible spectrum. Then, the precise relationship between visible and ultra-violet densities can be established. It is important that absolute determinations of density be made, and that the Perkin-Elmer instrument be modified, if necessary, to achieve this. When the plots over the enitre UV spectrum have been obtained, and an operating wavelength is eventually chosen,

SUBJECT: Ultra-Violet Densitometry

it is suggested that the densitometry be set up for use with the Beckman DU Spectrophotometer, if possible. The results will be issued in a final report, to which addenda will be added from time to time, as the positive-type materials change or are replaced.

25X1A The monitor should be contacted to see if [redacted] has decided on any given wavelength or wavelength region. If so, the results of the analysis can have immediate relevance.

TRANSMITTAL SLIP | DATE 23 June 1964

TO: [redacted]

ROOM NO. | BUILDING

REMARKS:

This is one of the projects we recently formalized. The monitor is [redacted], but I felt this should pass through you first. The need for this is perhaps not immediate, but certainly necessary.

We will keep you informed of progress, and will provide [redacted] with any information he may require along these lines.

[redacted] has the responsibility for this project.

FROM: [redacted]

ROOM NO. | BUILDING | EXTENSION

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